

**PHASE 3
FIELD CONSTRUCTION PLAN
FOR 2009 CONSTRUCTION SEASON
RICHARDSON FLAT TAILINGS SITE**

EPA SITE ID: UT980952840

May 14, 2009

Prepared for:

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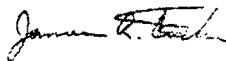
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1.0 INTRODUCTION

This Field Construction Plan (FCP) details the construction components, stormwater management and completion milestones to be undertaken for the 2009 construction season at the Richardson Flat site. Elements to be constructed during the 2009 construction season consist of modified versions of Tasks 5 and 6 of the Remedial Design and Remedial Action (RD/RA) at Richardson Flat. Task 5 and 6 areas are presented in Figure 1-1. The tasks are required to complete the selected remedy approved by the United States Environmental Protection Agency (EPA) at the Richardson Flat Tailings Site, Site ID UT980952840, (The "Site") near Park City, Utah as outlined in the RD/RA Work Plan. The proposed modifications create additional riparian habitat and wetlands, reduce the risk of impoundment dike failure by providing additional buttressing to the embankment and decrease the overall quantity of material imported into the Richardson Flat repository by storing the material generated this year outside the impoundment. This proposed plan is protective of human health and the environment and consistent with the NCP. Groundwater is not impacted as the existing groundwater regime is not being modified in a manner that will bring it into contact with any contaminated materials.

1.1 Scope and Background of Work

This is the third FCP submitted to EPA. The work outlined in this FCP represents the third of at least four annual phases of construction. Each phase consists of individual or groups of tasks to be completed in single construction season. The FCP for Task 1 was submitted to EPA and approved on July 16, 2008. The Task Completion Report (TCR) for Task 1 was approved by EPA on July 16, 2008. The FCP for Phase 2, (2008 Construction Season) was submitted to EPA and approved on September 23, 2008. The Task Completion Report (TCR) for Phase 2 was approved by EPA on October 30, 2008. Task 1 and Phase 2 consisted of the first of five tasks of construction at Richardson Flat as outlined on Figure 10.2 of the RD/RA.

A full description of Site background, investigative history, specifications, health and safety, design elements, project management and construction procedures are presented in the Remedial Design and Remedial Action Work Plan (RD/RA, RMC 2007a). This FCP is intended to act as a planning supplement to the RD/RA with a focus on stormwater runoff protection and actual remediation related construction to take place in the field.

The work activities described in this FCP are designed to reduce surface water interaction with tailings and maximize natural resource restoration opportunities at Site. The work as proposed and outlined in this FCP varies slightly from the work as outlined in the RD/RA Work Plan. Using knowledge related to the soil conditions underlying the tailings materials and removal of the tailings material it is proposed that changes in the work be completed as outlined below and as shown on Figure 1-1:

- 1) Relocation of the west portion of the South Diversion Ditch (SDD) from its current location to a new location as much as 250 feet south of its present location.
- 2) Creation of a New Tailings Storage Area (Area B-1W-RP) located north of the newly relocated diversion ditch within the area of the old diversion ditch location.
- 3) Constructing additional wetland and riparian areas along the banks of and associated with the newly relocated diversion ditch.

Work to be performed during the 2009 construction season:

Task 5, Area B-1-W:

- Source removal, grading, confirmation sampling, topsoil placement and channel construction in area B-1-W (Figure 1-1).
- Channel construction will consist of performing a realignment of the west portion of the SDD through this area.

- Wetland construction in area B-1-W. The realigned ditch will be used to supply water to several interconnected constructed wetlands. This will provide additional on-Site wetland habitat and compensation for potential Natural Resource injuries.
- Following the removal of all of the contaminated materials in the existing SDD, it will be backfilled with clean native material to a level consistent with the existing original soils/tailings interface. Tailings excavated from B-1-W will be placed in the area that previously contained the SDD. The SDD was originally constructed in tailings in this area. Park City Ventures was advised by their consulting engineers to construct the bottom of the SDD at least three feet below the tailings/native soil interface. In order to accomplish this, up to fifteen feet of tailings material had to be removed in certain areas along the westerly extent of the SDD. To properly reconstruct the SDD and remove the tailings material as required to create an acceptable bank slope, a great deal of material would have to be removed from the impoundment dike system along its south side. This action could potentially increase the risk of failure of the impoundment dike adjacent to the SDD. The risk is avoided by placing materials generated during the remediation of B-1-W in the SDD area, thus providing additional buttressing of the impoundment dike system as shown in Figure 1-1. This new storage area will provide additional tailings capacity at the Site and reserve the main impoundment for future tailings disposal and do so without increasing the overall footprint of the contaminated area.
- Tailings will be covered as described in the RD/RA.
- Revegetation.

Task 6, South Diversion Ditch

- Contaminated sediment removal, grading, confirmation sampling and clean native material backfilling of the west portion of the South Diversion Ditch (SDD, Figure 1-1). This work will be conducted upstream from the pond located at the terminus of the SDD to the culvert crossing in the central part of the site.
- Placement of clean cover soil and revegetation after the completion of tailings placement.

1.2 Remedy Description and Overview

The remedy is specified in the Record of Decision (ROD) and detailed in the RD/RA.

The selected remedial alternative contains the following elements related to Phase 3 areas:

- Source removal will consist of the excavation of contaminated materials in selected areas south of the South Diversion Ditch (referred to as Area B). Excavation would extend to the visual interface between the tailings and native soils in low lying areas subject to seasonal ponding or interaction with shallow groundwater, or to a depth where a clay soil cover can be placed;
- Placement of a minimum twelve inches of low permeability soil cover on areas where cover is required. The cover will be machine compacted. Upon completion of the low permeability soil cover, a six-inch topsoil, or soil suitable to facilitate revegetation, will be placed. The final surface cover will be a minimum of eighteen inches thick and the surface will be graded to control surface stormwater runoff and drainage;
- If needed, the placement of topsoil or soil suitable material to facilitate revegetation, in areas where tailings are completely removed;
- Placing excavated materials in the impoundment created by the movement of the SDD as described above. The main impoundment will be used by United Park and others to accommodate similar Bevill-exempt mine waste materials in the upper Silver Creek watershed;
- Regrading and revegetation of areas affected by remedial activities at the Site. Areas in which tailings were removed would be restored, where possible, to existing topographic conditions; and
- Monitoring of Site conditions will be conducted as described in the Operations and Maintenance Plan found in Appendix F of the RD/RA Work Plan. The Operations and Maintenance plan is consistent with the RD/RA Consent Decree and Statement of Work. Surface water and general site conditions will be monitored consistent with those documents.

All cover and topsoil placed in upland areas containing less than 500 parts per million (ppm) lead and 100 ppm arsenic will be classified as clean. All cover and topsoil placed in wetland areas, including the realigned South Diversion Ditch, containing less than 310 ppm lead will be considered clean.

2.0 WORK PROCEDURES

Work will be conducted according to specifications presented in Section 6.0 of the RD/RA Work Plan.

The work procedures presented in this section will be field fit as necessary to provide flexibility needed to implement the ROD in areas that were originally not identified as a source area for surface water contamination. Any additional work deemed necessary to complete the overall objectives of the project will be performed during construction.

2.1 Work Summary

Work will be conducted in Area B-1-W and the western portion of the SDD located downstream of the main diversion ditch crossing (Figure 1-1). Work will begin with the construction of a new ditch and pond system in Area B-1-W. This ditch and pond system will be used to replace the west portion of the SDD. Ditch construction will begin at the pond located at the terminus of the SDD (Figure 1-1). Construction will continue until the SDD is intersected directly downstream of the culvert crossing. An existing wetland in this area will be connected to the relocated SDD. Construction in this area will be limited to that needed to convey SDD water to the pond. A diversion will be constructed in the SDD to direct water into the new ditch/pond system. A two-step ditch realignment is necessary to facilitate water movement through the SDD system and remediation in the Task 5 and Task 6 areas.

The new relocated SDD will be constructed and water will be diverted at the main impoundment culvert and the western portion of the SDD will be allowed to dry. Contaminated sediments will be excavated from the SDD. Once contaminated sediments are removed from the SDD, the ditch will be backfilled to the height of the original ditch surface (typically three to four feet) with clean clay-rich native materials and compacted.

Work in Area B-1-W will re-commence upon the completion of SDD remediation, with the removal of tailings in the four wetland areas presented on Figure 1-1. The four wetland areas will be constructed to convey SDD water through wetlands constructed in clean material. Tailings excavated from area B-1-W will be placed in area B-1 W-RP which previously contained the SDD. The ditch was originally constructed in tailings in this area. A new reach of ditch will be constructed to connect wetland Areas 2 and 3 south of the rail trail. Two culverts will be placed beneath the rail-trail to connect Wetland Areas 1 through 4. All areas containing tailings will be covered in accordance with the RDRA. All areas will be revegetated in accordance with the RDRA.

2.2 B-1-W Work Procedures

Work activities in areas B-1-W (Figure 1-1) will consist of source removal, placement and grading of low permeability cover soil, where required, and topsoil, wetland construction and channel reconstruction as specified in Section 6.0 of the RD/RA. The area will be revegetated after source removal and placement of the soil cover is complete.

B-1-W Construction will consist of the following stages:

- 1) Construction will start at the main pond at the westernmost end of the ditch with the replacement of the SDD and will move in an easterly direction to the existing wetland (Figure 1-1) and the SDD. The ditch will be constructed in clean material. Tailings encountered during ditch construction will be placed on the impoundment.

- 2) A temporary haul crossing over the relocated SDD will be installed. BMPs will be installed to prevent cross-contamination of the new ditch. No work will be done south of the rail trail at this time.
- 3) Work in Wetland Areas 1 and 4 will be limited to that required to facilitate the movement of water and to allow future completion of the remaining pond/wetland areas without working in the water.
- 4) The clean fill generated from the new ditch and pond construction will be stockpiled for future use.
- 5) An obstruction or dam (Figure 1-1) will be placed in the SDD at Wetland Area 1 to allow water to flow through the new ditch and pond system. This will allow for Task 6 SDD sediment removal to be conducted.
- 6) Task 5 activities will restart after the completion of SDD clean soil backfilling described in Task 6. These activities will consist of tailings removal and wetland construction in Wetland Areas 1, 2, 3 and 4.

Work Activities in Area B-1-W will consist of:

- 1) If needed, excavation and construction areas will be cleared and grubbed prior to the placement of materials. Clearing and grubbing will include the removal of organic matter such as plants, trees and woody material, as well as any other material from the Site. Large non-organic materials such as boulders that interfere with grading will be removed from the areas as required. Topsoil will be reclaimed to the extent that it can be without contamination.
- 2) Appropriate dust control will be conducted during all excavation, soil placement and transport and grading activities.
- 3) Air monitoring will be conducted during earthmoving activities. If required, additional air monitoring locations and/or additional BMPs will be established to

reduce the offsite migration of contaminants. Air monitoring will be conducted according to procedures outlined in Section 11.1.1 or the RD/RA and Section 4.4.5 of the FSP.

- 4) Tailings excavation will extend to the visual interface between the tailings and native soils or to a depth where a clay soil cover can be placed. Cover soil details are presented in Figure 2-1. Tailings excavation will be guided using a field portable X-ray Fluorescence Meter (XRF). Excavation and transport will be staged in a manner to avoid the re-contamination of clean areas.
- 5) Where mine waste is transported to and placed in the Impoundment or New Tailings Storage Area (see Task 6), the material will be graded to conform to general site topography prior to the placement of cover soils.
- 6) Surfaces and subgrades will be graded to approximate final configurations and shapes prior to cover and topsoil placement. Subgrades and final graded surfaces will be confirmed by conventional survey techniques where applicable.
- 7) Imported soils will be screened with the XRF. A five sub-sample composite will be collected for every 5,000 cyds and screened with the XRF. Five-percent of the composite samples will be submitted to the laboratory to confirm XRF results. All cover and topsoil placed on-site will be clean as described in Section 1.1. Sampling protocol and analytical methodologies are described in the Field Sampling Plan (FSP, RMC, 2007b).
- 8) Cover soils will be low permeability, high clay content soils typical of those found in the region. Large rock material will be avoided. Clay rich soils located on-site will be used as cover material using the same criteria outlined in Section 6.1 of the RD/RA for quality control.

- 9) Cover soils will be compacted with tracked or equivalent equipment. Compaction methods also may include rolling and/or vibrating, as necessary. Cover soils will be inspected and approved by United Park or its representatives prior to topsoil placement.
- 10) The final cover subgrade surface will be uniform to allow for the placement of a consistent topsoil layer.

Note: Items 11 through 13 are referred to as General Topsoil Procedures.

- 11) Final surfaces, grades and erosion control structures will not be considered complete until approved by United Park or its representative.
- 12) Topsoil will be screened to remove particles greater than six inches and will be suitable to support vegetation. Topsoil will be placed to a minimum depth of six inches and will contain sufficient organic matter and nutrients to ensure that revegetation efforts are successful.
- 13) The seedbed will consist of topsoil placed during remedial activities. Topsoil will be lightly compacted and scarified as necessary. The seedbed will be roughened prior to seeding.
- 14) Wetland construction will consist of additional grading and the construction of flow control and habitat features. Areas may be excavated into the shallow water table to provide additional aquatic habitat. Habitat islands and features will be constructed out of soil containing less than 310 ppm lead.
- 15) Revegetation will be conducted on all graded areas and areas receiving topsoil.
- 16) The upland seed mix will include a mixture of deep-rooted annual and perennial native grass and forb species. The annual species will provide rapid germination to

aid in short term revegetation. The short-term revegetation will decrease the runoff potential of the slope and will keep the imported soil in place. Perennial species will provide longer term, more stable revegetation. Wetland areas will be revegetated with wetland specific species. Appendix C of the RD/RA contains the seed specifications for the Site.

17) Completion confirmation sampling is detailed in Section 4.0.

18) Ephemeral channels, as required, will be reconstructed in accordance with the specifications presented in Section 6.6 and Figure 5-3 of the RD/RA. Channel details are presented in Figure 2-1.

2.3 South Diversion Ditch Work Procedures

Task 6 SDD construction will consist of the following stages:

- 1) A temporary diversion will be built to direct water into the ditch constructed in Area B-1-W (Section 2.1).
- 2) Water will be allowed to drain from the old ditch through Area B-1-W.
- 3) Contaminated sediments will be removed from the SDD when the area has been sufficiently drained.
- 4) Once the contamination is removed, clean clay rich fill will be placed in the old ditch and compacted. Fill will be placed to coincide with the original ground surface (typically 3 to 4 feet).
- 5) Once the clean fill reaches the original ground surface elevation, tailings will be placed in the cross section that once was the SDD. Tailings placement will continue until the area identified as the Tailings Storage Area B-1 W-RP (Figure 1-1) is full or tailings removal from B-1-W work areas is complete.
- 6) Tailings will be covered with clean materials and revegetated.

Task 6 SDD Work activities will include:

- 1) If needed, excavation and construction areas will be cleared and grubbed prior to construction activities. Clearing and grubbing will include the removal of organic matter such as plants, trees and woody material, as well as any other material from the Site. Large non-organic materials such as boulders that interfere with grading will be removed from the areas as required.
- 2) Appropriate dust control will be conducted during all excavation, soil placement and transport and grading activities.
- 3) Air monitoring will be conducted during earthmoving activities. If required, additional air monitoring locations and/or additional BMPs will be established to reduce the offsite migration of contaminants. Air monitoring will be conducted according to procedures outlined in Section 11.1.1 of the RD/RA and Section 4.4.5 of the FSP.
- 4) Flow will be redirected to the relocated SDD in Area B-1-W prior to sediment removal.
- 5) Contaminated sediments in the bottom of the Diversion Ditch will be removed and transported to the impoundment. The ditch will be considered clean when sediment lead concentrations are below 310 ppm. Sediment excavation will be guided using a field portable X-ray Fluorescence Meter (XRF) where possible. Sediments may be dried overnight prior to XRF screening. Excavation and transport will be staged in a manner to avoid the re-contamination of clean areas;
- 6) Areas of the Ditch containing sediments exceeding 310 ppm lead at depths impracticable to excavate will be covered with clean clay soils.

- 7) Clean soils will be placed in the bottom of the channel. The channel will be filled and compacted until the original ground surface is reached (typically three to four feet).
- 8) Tailings will be placed in the original ditch cross section and area identified as the new Tailings Storage Area on Figure 1-1. These tailings will buttress the impoundment dike. The tailings will be graded and prepared for placement of clean cover soils.
- 9) Cover soils will be low permeability, high clay content soils typical of those found in the region. Large rock material will be avoided. Clay rich soils located on-site will be used as cover material using the same criteria outlined in Section 6.1 of the RD/RA for quality control.
- 10) Cover soils will be compacted with tracked or equivalent equipment. Compaction methods also may include rolling and/or vibrating, as necessary. Cover soils will be inspected and approved by United Park or its representatives prior to topsoil placement.
- 11) The final surface will be uniform to allow for the placement of a consistent topsoil and/or growth media layer.
- 12) Topsoil will be placed in accordance with General Topsoil Procedures specified in Section 2.1.
- 13) Revegetation will be conducted on all graded areas and areas receiving topsoil.
- 14) The seed mix will include a mixture of deep-rooted annual and perennial native grass and forb species. The annual species will provide rapid germination to aid in short term revegetation. The short-term revegetation will decrease the runoff potential of the slope and will keep the imported soil in place. The perennial

species will provide longer term, more stable revegetation. Wetland areas will be revegetated with wetland specific species. Appendix C of the RD/RA contains the seed specifications for the Site.

15) Completion confirmation sampling is detailed in Section 4.0.

3.0 STORMWATER MANAGEMENT

Stormwater management will be conducted to:

- Reduce the potential for offsite migration of sediments, soil and tailings; and
- Eliminate the re-contamination of areas that have been covered or have undergone source removal.

General stormwater management elements include:

- Berms, wattle and/or silt fencing as required to prevent the migration of materials from work areas;
- Sediment barriers in the new diversion ditch and wetland areas to capture sediment and prevent downstream off-site migration. These in-flow barriers may include a combination of filter fabric, drop structures and/or temporary retention structures;
- Hay or straw bale barriers will be placed in appropriate ephemeral channel features that drain from work areas. The hay bales will be placed downgradient from the silt fence or wattle barrier;
- A supply of hay or straw bales and wattle material will be stored onsite during construction; and
- Stormwater runoff protection measures will remain in-place until revegetation efforts are complete.

General procedures to reduce the tracking of contaminated materials into uncontaminated areas will include:

- All trucks and equipment working in contaminated materials (e.g. tailings and sediments) will be decontaminated prior to working with clean materials. Decontamination procedures are described in Section 11.8 of the RD/RA;
- A stabilized construction entrance will be used, if necessary, to remove gross contamination for trucks hauling tailings;
- All trucks and equipment will be decontaminated prior to leaving the site; and
- Dust control will be conducted as necessary as described in Section 11.1.1 of the RD/RA.

Specific stormwater runoff protection elements to be implemented prior to and during construction will include:

- Silt fence or wattle will be placed along the downgradient side of excavation areas as required. The silt fence or wattle will prevent the migration of tailings and soils from the work zones. The silt fence or wattle will remain in place until revegetation efforts are complete;
- The raised elevation of the rail trail and county road will prevent the migration of soil and tailings from the work area to the south;
- Hay bale barriers will be placed in ephemeral channels that drain from the work zone. The hay bales will be placed downgradient from the silt fence or wattle barrier; and
- Sediment barriers will be placed as needed at the culvert crossing and the downstream end of the South Diversion Ditch directly above the pond. This barrier will prevent the downstream migration of any sediment that has inadvertently migrated into the South Diversion Ditch and will remain in-place for the duration of the Remedial Action.

4.0 COMPLETION CONFIRMATION

Completion of work will be based upon confirmation that the following Completion Milestones are complete:

- 1) Source removal in areas B-1-W and the SDD is complete;
- 2) Cover placement in B-1-W and the New Tailings Storage Area is complete;
- 3) Confirmation samples have been collected and verify source removal and cover soil quality;
- 4) Channel reconstruction and topsoil placement are complete; and
- 5) Reclamation (surface grading drainage control and revegetation) is complete.

4.1 Source Removal Confirmation

Source removal will be confirmed using two methodologies:

- 1) Source removal will be confirmed with the XRF concurrently with removal.
- 2) Confirmation samples in areas B-1-W will be collected on a grid located on 200-foot centers and analyzed with the XRF. Confirmation samples will be collected using procedures and analytical methods detailed in the FSP (RMC, 2007b). Five-percent of all confirmation samples will be submitted to the laboratory to confirm XRF results. Sample locations are presented on Figure 4-1.

4.2 Cover Placement Confirmation

Cover placement will be confirmed using two methodologies:

- 1) Imported cover soils will be screened with the XRF. A five sub-sample composite sample will be collected for every 5,000 cyds and screened with the XRF. Five-percent of the composite samples will be submitted to the laboratory to confirm XRF results. All upland cover and topsoil will contain less than 500 ppm lead and 100 ppm arsenic. All wetland restoration area cover and topsoil will contain less than 310 ppm lead. Sampling protocol and analytical methodologies are described in the Field Sampling Plan (FSP, RMC, 2007b).

- 2) Following cover placement the thickness of clean cover will be measured. If necessary, a hand-coring tool will be used to measure thickness with minimal disruption to the cover. Cover thickness confirmation data will be collected on a grid located on 200-foot centers. If cover thickness is insufficient, additional sampling and cover placement will be conducted. Sampling protocol and analytical methodologies are described in the FSP (RMC, 2007b). Sample locations are presented on Figure 4.1.

4.3 Channel Construction Confirmation

All Channels will be visually inspected to ascertain that construction is complete. Conventional Survey methods will be used if required.

4.4 SDD Sediment Removal Confirmation

- 1) Sediment excavation will be guided using a field portable X-ray Fluorescence Meter (XRF)
- 2) Sediment confirmation sampling will be conducted every 100 feet of ditch length remediated. Ditch sediment sampling protocol and analytical methodologies will be in accordance with wetland sampling as described in the FSP (RMC, 2007b).

5.0 DELIVERABLES

A Task Completion Report (TCR) will be prepared. The TCR will be provided to the EPA Remedial Project Manager following the completion of the remediation task. The TCR will contain a detailed description of the work completed and will include results of any sampling efforts undertaken.

6.0 REFERENCES

Resource Management Consultants, Inc (RMC), 2007a, Remedial Design/Remedial Action Plan (RD/RA), Richardson Flat, Site ID Number: UT980952840, With Attached Work Plan.

Resource Management Consultants, Inc (RMC), 2007b, Field Sampling Plan, Remedial Investigation, Richardson Flat, Site ID Number: UT980952840, With Attached Work Plan.

Resource Management Consultants, Inc (RMC), 2007c, Health and Safety Policy, Remedial Investigation, Richardson Flat, Site ID Number: UT980952840, With Attached Work Plan.

